

From: [Jessica Winter](#)
To: [Eric Blischke/R10/USEPA/US@EPA](#)
Subject: Re: RI Comment
Date: 07/02/2010 12:51 PM

I think the request to LWG here is:

1. Please explain why "the majority of the PCB mass load enter[s] the Study Area during low-flow conditions as compared to high-flow periods" (10.2.1.3 page 10-38) when this conflicts with your (Eric's) understanding that there is a 5x increase in upstream loading during high flow conditions.
2. Assuming that there /is/ an increase in upstream loading during high flow conditions, to be conservative we should use high flow conditions to estimate loads in the RI.
I would agree with you, Eric, that a /relatively/ high flow event is adequate and we don't need to use the extreme high flow events for this, but a "typical water year" as discussed on page 10-14 would probably not be sufficiently conservative -- maybe something closer to a 2-year or 5-year flood? You point out that once the fate and transport model is done, we can use results from that, so perhaps the best approach will be to look at a few decades of model output and pick a representative value or range of values from that. I'm not sure what to expect re: the timing of the next iterations of the modeling and the RI, but that sounds good if the timing will work.
3. The loading estimates are based on empirical measurements of concentrations and modeled predictions of flow rates (from the HST- see last paragraph of page 6-6). If the modeled flow rates are off, that would explain #1 above. Lacking a broad validation of the HST model, i don't know whether that's the issue.
4. Using the Nov 2006 stormwater-influenced event with flows exceeding 100,000 cfs to represent low flow conditions is another potential explanation for #1 above.

Hope this helps. Sorry to pack so much into one comment- I know it was very dense. I am available before 11 and after 2 on Tuesday.

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Blischke.Eric@epamail.epa.gov wrote:

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> Tomorrow would be fine. I will actually be out tomorrow and Monday but
> will be working to finalize the RI comments early next week
> (Tuesday/Wednesday). It is really the eco comments that are the hold
> up.
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> Eric
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> From: Jessica Winter <Jessica.Winter@noaa.gov>
> To: Eric Blischke/R10/USEPA/US@EPA
> Date: 07/01/2010 12:37 PM
> Subject: Re: RI Comment
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> Hi Eric-
> I will get back to you on this soon- is COB tomorrow OK? What is your
> timeframe for getting this out? I'm just in the middle of a couple other
>
> things right now, but this shouldn't take me too long.
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> Blischke.Eric@epamail.epa.gov wrote:
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>> Jessica, we are in the process of finalizing our comprehensive set of
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>> RI
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>> comments. One of your comments is quite complex and I do not fully
>> understand it. The comment is repeated below:
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>> The approach for estimating loads is limited in that it considers only
>> typical water years. Consider looking at high flow conditions instead.
>> At many sites, the majority of sediment transport occurs under high
>>
> flow
>
>> conditions, even though these conditions don't occur very often, and
>> thus contaminant transport also occurs primarily under high flow
>> conditions.* Also, will the meaning of "typical" change with climate
>> change? We might expect more frequent floods in the future. For both
>> these reasons, looking at flood conditions rather than typical
>> conditions will probably give a better sense of contaminant transport.
>> *Section 6.1.1.1 of this RI indicates that more than half the PCB
>> loading occurred at low flow. This is different from many other sites
>> and hard to justify conceptually since the volume of water is
>>
> described
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>> as roughly evenly split between high and low flow (52% to 48%), and
>>
> the
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>> mass of PCBs on suspended solids wouldn't be expected to decrease at
>> high flow, even if the concentration is a bit diluted. Section
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> 10.2.1.3
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>> (p. 10-38) says that PCB concentrations at high flow were lower than
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> at
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>> low flow, but what were the masses? You wouldn't be too surprised to
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> see
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>> a lower chemical concentration at high flow, both on a mass basis
>> because of additional scour of larger (cleaner) sediment, and on a
>> volume basis because of additional flow, but if the mass of chemical
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> at
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>> high flow is significantly lower than at low flow, some investigation
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> is
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>> warranted. It may be that the modeled high and low flow rates used in
>> these calculations were incorrect--underestimating high flows or
>> overestimating low flows would explain the discrepancy. It's hard to
>>
> say
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>> whether this is the case based on the data in the HST model
>> reports--calibration velocities are shown there only for a single
>> sampling event in May 2003 and validation is shown for two events in
>> 2004 (Appendices H and J to the 2006 modeling report), but I wasn't
>>
> able
>
>> to tell whether the observations took place during high or low flow
>> conditions. Another explanation for the unexpected result may be
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> E2.2.1
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>> p. E-4: "the November 2006 stormwater-influenced low-flow sampling
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> event
>
>> was considered a low-flow event for this loading analysis." This event
>> may not be representative of low flow because there was extremely high
>> precipitation and flow exceeded 100,000 cfs by the end of the event
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> even
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>> though at the beginning of the event it was low flow (23,000 cfs) (see
>> figure 5.3-4). I would recommend looking at the measured
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> concentrations
>
>> from the November 2006 sampling event to see how they compare to other
>> "low flow" sampling results.(I tried looking at the data myself a
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> little
>
>> bit but it's a pain to look at -- some water data in pg/L, some in
>>
> ug/L,
>
>> and so on-- so probably the best would be to ask Integral or whichever
>> subcontractor wrote that section to evaluate the concentrations they
>> used in their "subaveraging" calculations (see p. 6-7 of the RI) and
>> determine whether they are consistent with other low flow
>> concentrations.
>>
>> It seems that the loading estimates are based on empirical data. We
>> collected surface water during a relatively high flow even (170,000
>>
> cfs)
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>> to gain an understanding of what was coming into the system when the
>> river was high and turbid. I sense is that this represents a

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> reasonable
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>> attempt to understand loading during high flow conditions even though
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> we
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>> do not have data for the extreme high flow events (e.g., 400,000 cfs).
>> However, the 400,000 cfs events occur relatively infrequently (1948,
>> 1964, 1996) while the 100,000 -200,000 cfs event takes place just
>>
> about
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>> every year. So the question is two fold: 1) Do we need to look at
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> the
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>> extreme high flow events if we are looking at the typical high flow
>> event and 2) If we need to look at higher flow events, how do we do
>>
> this
>
>> from a loading perspective recognizing that we are considering the
>> extreme flow event through our fate and transport modeling efforts.
>>
>> As for the flow/volume relationships, my take on the data is that
>> upstream concentration are lower than high flow by a factor of two but
>> that the high flow event is 10 times that of the low flow condition
>> resulting in a 5X increase in upstream loading during high flow
>> conditions. The more interesting thing from my perspective is how the
>> high flow events swamp the localized sources that are so very
>>
> prominent
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>> during low flow conditions.
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>> I agree that the November 2006 event is not a "low flow" event per se.
>> It is really a "stormwater influenced" event as described in the
>>
> Section
>
>> 5 figures (e.g., figure 5.3-15/16).
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>> Anyway, can you take another look at your comment and edit it taking
>> into account some of my observations above and being clear as to what
>> change we want to see in the revised RI Report.
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>> Thanks, Eric
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>> Loading information is based on empirical data. Water sampling at
>> 170,000 cfs is used to estimate high flow loads. Elements of the
>> rationale can be discussed as part of fate and transport modeling
>> approach.
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